Takahara, and Yagyu. And Claims 26 and 27 have been rejected under 35 §103(a) based on Wilska, Takahara, Yagyu, and Shigeta. The rejections are traversed. Claims 1, 6, and 12 have been amended to more clearly claim the Applicants' invention. New Claims 37-39 have been added to the application. Reconsideration and further examination are requested.

The Applicants' portable communications device includes a matrix display, a power management circuit that controls the power consumption of a display circuit that actuates pixel electrodes to present an image on the display, and a light source that illuminates the image. After the image has been illuminated, the power management circuit lowers the power consumption of the display circuit until the next image is ready to be presented on the display, without comparing the new image with the previous image. As such, the power management circuit lowers the power consumption of the display circuit between sequentially generated display data. By lowering the power consumption of the display circuit between the writing of images, the power management circuit has the advantageous feature of lengthening the lifetime of the batteries used to power the viewing device.

Wilksa, alone or in combination with Takahara, Shigeta, Yagyu, and/or Kikinis, does not teach or suggest a portable communications device with such features, in particular, a power management circuit that lowers the power consumption of the control circuit after the image is illuminated until display data for the next image from the control circuit is ready to be presented to the matrix display, without comparing the illuminated image with the next image, as required by amended Claims 1, 6, and 12.

Wilska discusses, as illustrated in its Figures 1-3, a device for personal communication, data collection, and processing. The device includes a housing (1) which encloses a data processing unit (2) that connects to a cellular telephone (17) with a mobile controller (8). The device also includes a display (9) mounted to the housing (1) for displaying images to a user of the device.

We agree with the Office Action that Takahara, unlike Wilska, discusses an active matrix liquid crystal display with a light source. Such a system is said to be usable as a view finder.

Neither Takahara nor Wilska, however, mentions the claimed power management circuit that controls the power consumption of the control circuit, as recited in amended Claims 1, 6, and 12. Furthermore, neither reference discusses lengthening the lifetime of an energy source used to power the display, which is a particular advantage of the Applicants' power management circuit. Without such an advantage, there is no motivation to include the Applicants' power management circuit in Wilska's nor Takahara's devices.

Without a power management circuit that lowers the power consumption of the control circuit after an image has been presented until display data for the next image from the control circuit is ready to be presented, Wilska's device, alone or in combination with the teachings of Takahara, cannot include the claimed display with a control circuit and power management circuit that lowers the power consumption of the control circuit between sequentially generated display data, as required by amended Claims 1, 6, and 12.

The Office Action further cites Shigeta as teaching a dichroic prism interposed between a lens and a matrix display, and Yagyu as teaching a light source with light emitting diodes against independent Claims 6 and 12.

Shigeta discusses, as shown in its Figures 1 and 2, a projection type image display device that includes three metal halide lamps (1), (2), and (3) provided with respective elliptic reflectors (4), (5), and (6), three visible-light filters (7), (8), and (9), three spherical reflectors (10), (11), and (12), and three condenser lens (13), (14), and (15).

Yagyu discusses, as shown in its Figure 18, a display apparatus that includes an optical modulation device with a pair of electrodes (512) and (515), and a photoconductor layer (513) and an optical modulation substance layer (517) between the electrodes. A light signal source (518) supplies light data carrying gradation data to the photoconductor layer (513), and a readout

light source (519) supplies readout light for reading out image data to the optical modulation substance layer (517).

Neither Shigeta nor Yagyu, however, teaches or suggests the Applicants' claimed power management circuit. Thus, Shigeta and Yagyu do not overcome the deficiencies of Wilska and Takahara. Accordingly, Wilska, alone or in combination with Takahara, Shigeta, and/or Yagyu, does not make obvious the invention described in amended Claims 1, 6, and 12. The § 103(a) rejections of Claims 1, 6, and 12 are therefore overcome.

The Office Action also cites Kikinis as teaching a wireless pager against dependent Claims 9 and 20. Like Wilska, Takahara, Shigeta and Yagyu, however, Kikinis does not teach or suggest the claimed power management circuit, and therefore does not overcome the deficiencies of Wilska, Takahara, Shigeta, and Yagyu.

Because claims 9 and 20 and the other rejected claims depend from Claims 1, 6, or 12, the reasons for allowance of Claims 1, 6, and 12 apply as well to the dependent claims.

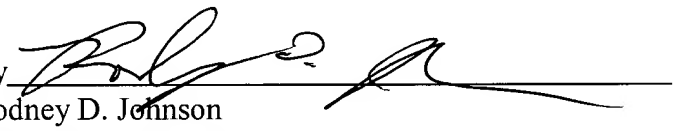
Reconsideration of the rejections under 35 U.S.C. § 103(a) is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims (Claims 1-20, 22-27, and 37-39) are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned attorney at (978) 341-0036.

Respectfully submitted,

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

By 

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Dated: January 9, 2003

MARKED UP VERSION OF AMENDMENTS

Claim Amendments Under 37 C.F.R. § 1.121(c)(1)(ii)

1. (Amended four times) A portable communications device having a reflective display comprising:

a device housing having a wireless receiver;

an active matrix liquid crystal display having an array of at least 75,000 pixel electrodes;

a lens that focuses an image on the display for viewing by a user;

a light emitting diode light source optically coupled to the display for illuminating the image;

a display control circuit positioned in the housing and connected to the wireless receiver, the matrix display, and the light source such that image data [that is] received by the receiver is input to the display control circuit, which generates a display signal to drive the electrodes to present the image; [and]

an optical coupler that couples light from the light source onto the matrix display and the reflected light through the lens; and

a power management circuit that controls the power consumption of the display control circuit, the power management circuit lowering the power consumption of the display circuit after the image is illuminated until the next image is ready to be presented on the matrix display, without comparing the illuminated image with the next image.

6. (Amended four times) A portable communications device having a reflective color sequential display comprising:

a device housing having a wireless receiver;

an active matrix liquid crystal display having an array of at least 75,000 pixel electrodes;

a lens for viewing the display and spaced from the display;

a plurality of light emitting diodes that sequentially illuminate the display;

a color sequential display control circuit positioned in the housing and connected to the wireless receiver, the matrix display, and the light emitting diode such that image data that is received by the receiver is input to the display control circuit which generates a display signal to drive the pixel electrodes to present an image, and a timing signal to drive the light emitting diodes to illuminate the image;

a dichroic prism for directing the light from the light emitting diodes to the active matrix liquid crystal display and coupling reflected light to the lens; [and]

a battery for powering the matrix display, display control circuitry and the light emitting diodes; and

a power management circuit that controls the power consumption of the display control circuit, the power management circuit lowering the power consumption of the display circuit after the image is illuminated until the next image is ready to be presented on the matrix display, without comparing the illuminated image with the next image.

12. (Amended four times) A portable communications device having a reflective display comprising:

a device housing having a wireless receiver;

an active matrix liquid crystal display having an array of at least a 640 x 480 array of reflective pixel electrodes, and a transistor circuit formed with single crystal silicon associated with each pixel electrode;

a lens that focuses an image on the display for viewing by a user;

a plurality of light emitting diodes for illuminating the image;

a display control circuit positioned in the housing and connected to the wireless receiver, the matrix display, and the light emitting diodes such that image data that is received by the receiver is input to the display control circuit, which generates a display signal to drive the pixel electrodes to present the image; [and]

a dichroic prism for directing the light from the light emitting diodes to the active matrix liquid crystal display and coupling reflected light to the lens; and

a power management circuit that controls the power consumption of the display control circuit, the power management circuit lowering the power consumption of the display circuit after the image is illuminated until the next image is ready to be presented on the matrix display, without comparing the illuminated image with the next image.